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COMMITTEE ON PAPERS AND PUBLICATIONS:

A. C. HALE,
J. F. GEISLER,
A. A. BRENEMAN, Editor.

ABSTRACTOR FOR AMERICAN PATENTS:

J. F. GEISLER.

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The **Journal of the American Chemical Society** appears monthly, except during July and August. It will contain all papers read before the Society, as well as abstracts from American and Foreign Journals, and a list of American Patents relating to Chemical Industries.

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The Meeting Room of the Society is the Law Lecture Room, University Building, Washington Square, New York.

The Regular Monthly Meeting is held on the first Friday of every month, at 8 P. M.

Corresponding Secretary:

A. C. HALE, 551 Putnam Ave., Brooklyn, N. Y.

Treasurer:

F. T. KING, 91 Columbia Heights, Brooklyn, N. Y.

The Library of the Society in the Library Room of the University of the City of New York, is accessible daily, from 10 A. M. to 5 P. M., on Tuesday and Wednesday evenings, and on the evenings of the regular monthly meetings of the Society.

Back numbers of the Journal are sold to Members at $3.00, to others at $5.00, per volume. Apply to the Librarian

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The Committee on Papers and Publications respectfully call attention to the resolutions of the Society, requiring that papers be submitted to the Committee before being read.

Authors will be furnished, gratis, with 20 reprints of each article published in the Journal, *if application for the same be made when the article is sent.*

Members are requested to give notice of any change of address, or failure in the delivery of the Journal. All communications relating to the Journal should be addressed to the Editor.

A. A. BRENEMAN, 97 Water St., New York.

THE WASHINGTON MEETING.

The third general meeting of the American Chemical Society was held at Washington August 17 and 18, 1891.

A conference of chemists representing many different organizations was held at the same time to consider further the question of more general organization of chemists in America. The result of this conference has been a substantial agreement on the part of the chemists present to recommend the union, under the name and organization of the American Chemical Society, of all the members of the different societies represented, and the reorganization of local chemical societies as local sections of the American Chemical Society. In pursuance of this recommendation the chemists of New York and vicinity have already taken steps to organize a New York section of the Society and it is expected that other chemists throughout the country will take similar action.

Certain modifications of the charter and constitution of the Society, which were suggested at the conference, will be decided upon at the next general meeting of the Society.

PROCEEDINGS.

FIRST DAY'S SESSION.

Monday, August 17, 1891.

The meeting was called to order at 10:50 A. M., in the Lecture Hall of the Columbian University. President Geo. F. Barker in the chair. The meeting was opened with a short address by the president.

The following nominations were made :

AS MEMBERS:

Jas. T. Anderson, Auburn, Alabama.
H. W. Austin, 1834 Jefferson place, Washington, D. C.
George H. Baert, Ph. C., West Lafayette, Indiana.

W. G. Berry, Chemist Health Dept., N. Y. City.
A. A. Bennett, Ames, Iowa.
M. Bird, North Louisiana, Experiment Station, Calhoun, La.
Arthur Lee Brown, 21 Spruce street, New York, N. Y.
E. A. Congdon, 18 Broadway, N. Y.
Henry E. Curtis, Lexington, Ky.
L. M. Dennis, Asst. Prof. Anal. Chem., Cornell Univ., Ithaca, N.Y.
George H. Ellis, A. B., Evanston, Illinois.
H. H. Harrington, College Station, Texas.
J. H. Kastle, Lexington, Ky.
B. W. Kilgore, Raleigh, North Carolina.
J. H. Long, Ph. D., Chicago Med. College, Chicago, Ill.
N. W. Lord, Ohio State Univ., Columbus, Ohio.
S. R. McKee, Matthews, North Carolina.
Herbert Marsland, Lincoln, Nebraska.
John A. Meyers, W. Va. Agr. Expt. Sta., Morgantown, Va.
G. W. Miles, Jr., 55 Fulton street, New York, N. Y.
G. E. Patrick, Agl. College & Exp. Sta., Ames, Iowa.
A. M. Peter, Chemist Ag. Exp. Sta., Lexington, Ky.
William Robertson, 68 Meeting street, Charleston, S. C.
Rudolph J. J. De Roode, Morgantown, W. Va.
B. B. Ross, Baton Rouge, La.
Edgar F. Smith, Ph. D., Univ. of Penna., Philadelphia, Pa.
Chas. A. Schaeffer, Ph. D., Iowa City, Iowa.
Dr. Hans von Strombeck, De La Vergne Ice Machine Co., N. Y.
W. C. Stubbs, Audubon Park, La.
A. R. Whitehill, Morgantown, W. Va.

AS ASSOCIATES.

Dr. E. A. Goodridge, Flushing, N. Y.
Chas. E. Keaton, Nostrand and Park aves., Brooklyn, N. Y.
W. C. Tiffany, 21 Spruce street, New York, N. Y.
C. F. Vanderford, University of Tenn., Knoxville, Tenn.
David S. Wood, Flushing, N. Y.

The reading of papers was then taken up. The following papers were read :

I. "A New Form of Voltameter," by G. C. Caldwell.
II. "A Theory of the Chlorite and Mica Groups." F. W. Clarke.
III. "On the Occurrence of Tin in Canned Goods." H. A. Weber.
IV. "On the Composition of American and European Chestnuts." Wm. Frear.

The meeting was then adjourned until August,18th, at 10 A.M.

DURAND WOODMAN,
Recording Secretary.

SECOND DAY'S SESSION.

Tuesday, Aug. 18, 1891.

The meeting was called to order at 11 A. M. in the lecture room of the Columbian University, President G. F. Barker in the chair.

The minutes of the previous session were read and accepted.

The following nominations were made :

W. W. COOKE, Agr. Expt. Station, Burlington, Vt.
PROF. WILLIAM FREAR, State College, Centre Co., Pa.
WM. HUTCHINSON, M. D., 207 Clinton st., Brooklyn, N. Y.
J. C. MIMS, 124 Bryan st., Savannah, Ga.
CLIFFORD RICHARDSON, Washington, D. C.
LOTHAR STERNBERG, Am. Sugar Refining Co., Jersey City, N. J.
CHARLES WELLINGTON, Amherst, Mass.
DAVID WESSON, B. S., Wilson Lard Co., Guttenberg, N. J.
PROF. L. W. WILKINSON, Agr. and Mech. College Auburn, Neb.

The following papers were then read :

I. Identification of Arsenic and Antimony, by Jas. T. Anderderson.

II. "On Acid Sulphate of Lime," by H. Endemann.

III. "On Gluten," by H. Endemann.

IV. "On the nature and origin of the Asphalt from the Island of Trinidad," by Clifford Richardson.

V. "Some characteristics of Pinite," by H. W. Wiley. Read by title.

VI. "On Metatitanic Acid," F. P. Dunnington.

Prof. Breneman moved that the thanks of the Society be tendered to Prof. F. W. Clarke and the members of the Washington Chemical Society for their courtesies, also to the authorities of the Columbian University for the use of the building. Carried.

Prof. Barker congratulated the Society on the large attendance and on the interest taken in the meetings and expressed his best wishes for the movement which looks towards the complete organization of the chemists of the country.

The Third General Meeting was then adjourned.

DURAND WOODMAN,
Recording Secretary.

THE CONFERENCE.

A conference meeting of committees representing the following chemical bodies met at 9:30 P. M., Aug. 17th, in the Columbian University, Washington, D. C.

The American Chemical Society.—G. F. Barker, A. A. Breneman, G. C. Caldwell, William McMurtrie, A. H. Sabin, H. H. Nicholson, R. W. Hall—290 members.

The Association of Official Agricultural Chemists.—H. W. Wiley, N. P. Lupton, G. C. Caldwell, W. C. Stubbs, William Frear—75 members.

The Chemical Section of the American Association for the Advancement of Science.—F. W. Clarke, T. H. Norton, Morris Loeb, Edward Hart—200 members.

The Chemical Section of the Franklin Institute.—Henry Pemberton, Jr.—70 members.

The Washington Chemical Society.—Edgar Richards, F. P. Dewey—70 members.

The Chemical Section of the Brooklyn Institute.—W. H. Kent—75 members.

The Louisiana Sugar Chemists' Association.—C. A. Crampton—52 members.

The Chemical Society of the University of Michigan.—A. B. Prescott—60 members.

The Cincinnati Chemical Society.—Alfred Springer—29 members.

The Manufacturing Chemists' Association of the United States.—Henry Bower.

Prof. A. B. Prescott was made chairman of the conference. Three sessions of the conference were held, on Monday evening, August 17th, and on Tuesday morning and Tuesday afternoon, August 18th, respectively.

The subject of the general organization of chemists in America was very fully considered. The work of the conference is best summed up in the following resolution, which was carried unanimously:

Resolved, That it is the opinion of this conference, 1st. That the American Chemical Society be so extented as to include the members of all local societies in its membership; 2d. That the New York members of the American Chemical Society be requested to organize a local section of the American Chemical Society in New York.

Conference adjourned.

THE SEPTEMBER MEETING.

REGULAR MEETING, SEPTEMBER 4, 1891.

The regular meeting of the Society was held in the Law Lecture Room of the University Building at 8:30 P. M.

Vice-President Breneman in the chair.

The minutes of the Washington meeting were read and accepted.

The following were elected.

AS MEMBERS.

Jas. T. Anderson, Auburn, Alabama.
H. W. Austin, 1834 Jefferson place, Washington, D. C.
George H. Baert, Ph. C., West Lafayette, Indiana.
W. G. Berry, Chemist Health Dept., N. Y. City.
A. A. Bennett, Ames, Iowa.
M. Bird, North Louisiana, Experiment Station, Calhoun, La.
Arthur Lee Brown, 21 Spruce street, New York, N. Y.
E. A. Congdon (Drexel Institute), 31 Broadway, N. Y.
Henry E. Curtis, Lexington, Ky.
L. M. Dennis.
George H. Ellis, A. B., Evanston, Illinois.
H. H. Harrington, College Station, Texas.
J. H. Kastle, Lexington, Ky.
B. W. Kilgore, Raleigh, North Carolina.
J. H. Long, Ph. D., Chicago Med. College, Chicago, Ill.
N. W. Lord, Ohio State Univ., Columbus, Ohio.
S. R. McKee, Matthews, North Carolina.
Herbert Marsland, Lincoln, Neb.
John A. Meyers, W. Va. Agricultural Expt. Station, Morgantown, Va.
G. W. Miles, Jr., 55 Fulton street, New York, N. Y.
G. E. Patrick, Agl. College & Exp. Sta., Ames, Iowa.
A. M. Peter, Chemist Agr. Exp. Sta., Lexington, Ky.

William Robertson, 68 Meeting street, Charleston, S. C.
Rudolph J. S. De Roode, Morgantown, W. Va.
B. B. Ross, Baton Rouge, La.
Edgar F. Smith, Ph. D., Univ. of Penna., Philadelphia, Pa.
Chas. A. Shaeffer, Ph. D., Pres't State Univ., Iowa City, Iowa.
Dr. Hans von Strombeck, De La Vergne Ice Machine Co., N. Y.
W. C. Stubbs, Audubon Park, La.
A. R. Whitehill, Morgantown, W. Va.
W. W. Cooke, Agr. Expt. Station, Burlington, Vt.
Prof. William Frear, State College, Centre Co., Pa.
Wm. Hutchinson, M. D., 207 Clinton St., Brooklyn, N. Y.
J. C. Mims, 124 Bryan st., Savannah, Ga.
Clifford Richardson, Washington, D. C.
Lothar Sternberg, American Sugar Refining Co., Jersey City, N. J.
Charles Wellington, Amherst, Mass.
David Wesson, B. S., Wilson Lard and Refining Co., Guttenberg, N. J.
Prof. L. W. Wilkinson, Agr. and Mech. College, Auburn, Neb.

The following nominations were made :

AS AN HONORARY MEMBER.

Jean Servais Stas, Brussells, Belgium.

AS MEMBERS.

George E. Barton, Torpedo Station, Newport, R. I.
Philip E. Chazal, E. M., No. 68 Meeting St., Charleston, S. C.
F. W. Clarke, National Museum, Washington, D. C.
A. R. L. Dohme, Ph. D., care of Sharp & Dohme, Baltimore, Md.
Walter G. Graves, Miller, Lake Co., Indiana.
John A. Miller, Ph. D., Niagara University, Buffalo, N. Y.
H. Pemberton, Jr., 1947 Locust St., Philadelphia, Pa.
Mark Powers, Chicago Medical College.
A. L. Smith, Ph. D., Englewood, Ill., Box 263.
Clarence L. Speyers, Rutgers College, New Brunswick, N. J.
Harvey W. Wiley, Washington, D. C.

AS ASSOCIATES.

Dr. E. A. Goodridge, Flushing, N. Y.
Chas. E. Keaton, Nostrand and Park aves., Brooklyn, N. Y.
W. C. Tiffany, 21 Spruce street, New York, N. Y.
C. F. Vanderford, University of Tenn., Knoxville, Tenn.
David S. Wood, Flushing, N. Y.

Prof. Breneman, as chairman of the Washington Conference Committee of the Society, then made an oral report of the conference at Washington and read the minutes of the same as furnished by the secretary, Dr. Springer.

Mr. Geisler moved that the report be accepted and the committee discharged. Carried.

The following papers were then read :

I. Raphides the cause of Acridity in certain Plants, by H. A. Weber, Ph. D. Read by the secretary in the absence of the author.

II. "On an Error in the present Official Method for the determination of Albuminoid Nitrogen, and the effect of the presence of Metals precipitable by Potassium Sulphide in the Determination of Nitrogen by the Kjeldahl Method," by Harry Snyder, Ph. D. Read by the Secretary in the absence of the author.

Miscellaneous business was then taken up, the chair asking what action was to be taken by the Society in regard to forming a local section in New York, as advised by the Conference Committee.

Prof. Hale: "It is necessary to know whether, under our constitution, we can make this change. Probably there is nothing to prevent the formation of a local section here if it is done in the right way."

The Chair : "A committee has been appointed for inspecting the law under which the Society is incorporated. At present an expression of opinion is all that can be given."

Prof. McMurtrie: "I think we should confirm any provisional agreement made by the conference committee."

Dr. Morris Loeb: "I think the Society should show at its

first meeting whether it desires to confirm the action of its committee."

Prof. McMurtrie moved: "That the action of the committee of conference at Washington be approved and that the Society take action in regard to it."

Prof. Hale offered as a substitute for the previous motion: "That the action of the committee of conference at Washington be approved, and that its recommendations be adopted." Seconded and carried.

Prof. Hale further moved: "That the matter be referred to the Board of Directors, and that they be requested to report upon the matter as soon as possible." Carried.

Mr. Geisler moved: That the Society extend to the Conference Committee a vote of thanks for the successful efforts they have made in behalf of the American Chemical Society in bringing to a harmonious issue the matter of the more general organization of the chemists of America. Seconded and carried.

The meeting was then adjourned.

DURAND WOODMAN,
Recording Secretary.

ON THE OCCURRENCE OF TIN IN CANNED FOOD.

By H. A. Weber, Ph. D.

The following investigation of the condition of foods packed in tin cans was prompted by an alleged case of poisoning, which occurred at Mansfield, Ohio, in April, 1890. A man and woman were reported to the writer as having been made sick by eating pumpkin pie made from canned pumpkin. The attending physician pronounced the case one of lead poisoning. The wholesale dealer from whose stock the canned pumpkin originally came, procured a portion of the same at the house where the poisoning occurred, and sent it to the writer for examination.

The results of the examination as reported in Serial No. 552, below, showed that the canned pumpkin contained an amount of stannous salts equivalent to 6.4 maximum doses and 51.4 minimum doses of stannous chloride per pound. On being notified of this fact, the dealer sent a can of the same brand of pumpkin from his stock. The inner coating of the can was found to be badly eroded, and upon examination, as reported in Serial No. 563, below, one pound of the pumpkin contained tin salts equivalent to 7 maximum and 56 minimum doses of stannous chloride.

The unexpected large amount of tin salts in such an insipid article as canned pumpkin, and the claimed ill effects of the consumption of the same, suggested the advisability of extending the investigation to other canned goods in common use. Accordingly a line of articles was purchased in open market as sold to consumers, no pains being taken to procure old samples. The collection embraced fruits, vegetables, fish and condensed milk. With the exception of the condensed milk, every article examined was contaminated with salts of tin. In most cases the amount

of tin salts present was so large that there can be no doubt of danger to health from the consumption of the food, especially if several kinds are consumed at the same meal.

METHOD.

The method employed in the determination of the tin was simply as follows:

The contents of each can were emptied into a large porcelain dish, and the condition of the inner coating of the can noted. After thoroughly mixing the contents, fifty grams were weighed off and incinerated in a porcelain dish of suitable size. The residue was treated with a large excess of concentrated hydrochloric acid, evaporated to dryness, moistened with hydrochloric acid, water was added, and the mass was filtered and washed, the insoluble matter being all washed upon the filter. After drying the filter with its contents, the whole was again incinerated in a porcelain dish and the residue treated as before. The solution thus obtained was properly diluted and saturated with hydrogen sulphide. After standing about twelve hours in a covered beaker the precipitate was filtered off and the tin weighed as stannic oxide.

RESULTS OF EXAMINATION.

Serial No. 552.—Sample of canned pumpkin, received of F. A. Derthick, April 22, 1890, sent by Albert F. Remy & Co., Mansfield, Ohio. Pie made from it supposed to have made a man and woman sick. The attending physician pronounced the case one of lead poisoning.

Tin dioxide with trace of lead	0.0424%
Grains per pound	2.97
Equivalent to stannous chloride	3.74
Minimum doses	51.4
Maximum doses	6.4

Serial No. 563.—Sample of canned pumpkin, received of Edward Bethel, June 27, 1890. Labeled: Choice Pie Pumpkin, packed at Salem, Columbiana County, Ohio, by G. B. McNabb, sent by A. F. Remy & Co., Mansfield, Ohio.

Tin dioxide	0.0444%
Grains per pound	3.11
Equivalent to stannous chloride	3.91
Minimum doses	56.
Maximum doses	7.

Can eroded.

Serial No. 565.—Sample of canned pumpkin, bought of T. B. Vaure, July 11, 1890. Labeled: Belpre Pumpkin, Golden. George Dana & Sons, Belpre, Ohio.

Tin dioxide	0.0054%
Grains per pound	0.38
Equivalent to stannous chloride	0.48
Minimum doses	7.7
Maximum doses	1.0

Can eroded.

Serial No. 566.—Sample of canned Hubbard Squash, bought of T. B. Vaure, July 11, 1890. Labeled: Ladd Brand, L. Ladd, Adrian, Michigan.

Tin dioxide	0.026%
Grains per pound	1.85
Equivalent to stannous chloride	2.33
Minimum doses	37.00
Maximum doses	4.7

Can badly eroded.

Serial No. 567.—Sample of canned tomatoes, bought of T. B. Vaure, July 11, 1890. Labeled: Extra Fine Tomatoes. Blue Label. Curtice Bros. Co., Rochester, N. Y.

Tin dioxide	0.012%
Grains per pound	0.84
Equivalent to stannous chloride	1.06
Minimum doses	16.00
Maximum doses	2.00

Inner coating eroded.

Serial No. 568.—Sample of canned tomatoes, bought of T. B. Vaure, July 11, 1890. Labeled: Fresh Tomatoes, Curtice Bros Co., Rochester, N. Y.

Tin dioxide	0.014%
Grains per pound	0.98
Equivalent to stannous chloride	1.23
Minimum doses	19.00
Maximum doses	2.5

Can eroded.

Serial No. 569.—Sample of canned peas, bought of T. B. Vaure, July 11, 1890. Labeled: Petites Pois, P. Emillien, Bordeaux.

Copper oxide	0.0294%
Grains per pound	2.06
Equivalent to copper sulphate	3.95
Tin dioxide	0.0068
Grains per pound	0.48
Equivalent to stannous chloride	.60
Minimum doses	9.6
Maximum doses	1.2

No visible erosion.

Serial No. 570.—Sample of canned mushroom, bought of T. B. Vaure, July 11, 1890. Labeled: Champignons de Choix. Boston fils. Paris.

Tin dioxide	0.020%
Grains per pound	1.40
Equivalent to stannous chloride	1.76
Minimum doses	28.
Maximum doses	3.5

Inner coating highly discolored.

Serial No. 571.—Sample of canned blackberries, bought of T. B. Vaure, July 11, 1890. Labeled: Lawton Blackberries. Curtice Bros. Co., Rochester, N. Y.

Tin dioxide	0.0114%
Grains per pound	0.80
Equivalent to stannous chloride	1.01
Minimum doses	16.
Maximum doses	2.

Inner coating eroded.

Serial No. 572.—Sample of canned blueberries, bought of T. B. Vaure, July 11, 1890. Labeled: Blueberries. Eagle Brand, packed by A. & R. Loggie, Black Brook, N. B.

Tin dioxide	0.03%
Grains per pound	2.10
Equivalent to stannous chloride	2.64
Minimum doses	42.00
Maximum doses	5.3

Can badly eroded.

Serial No. 574.—Sample of canned salmon, bought of T. B. Vaure, July 11, 1890. Labeled: Best Fresh Columbia River Salmon, Eagle Canning Co., Astoria Clatsop Co., Oregon.

Tin dioxide	0.0134%
Grains per pound	0.94
Equivalent to stannous chloride	1.18
Minimum doses	18.9
Maximum doses	2.3

Inner coating eroded.

Serial No. 578.—Sample of canned pears, received of Mr. Edward Bethel, July 29, 1890. Labeled: Bartlett Pears. Solan's Brand, Packed in Solano Co., California.

	Juice.	Fruit.
Tin dioxide	0.0074%	0.0074%
Grains per pound	0.518	0.518
Equivalent to stannous chloride	0.65	0.65
Minimum doses	10.4	10.4
Maximum doses	1.3	1.3

Can eroded.

Serial No. 579.—Sample of canned peaches, received of Edward Bethel, July 29, 1890. Labeled: Peaches, Wm. Maxwell, Baltimore, U. S. A.

	Juice.	Fruit.
Tin dioxide	0.0324%	0.0414%
Grains per pound	2.268	2.898
Equivalent to stannous chloride	2.85	3.65
Minimum doses	45.6	58.4
Maximum doses	5.7	7.3

Can badly eroded.

Serial No. 580.—Sample of canned blackberries, received of Edward Bethel, July 29, 1890. Labeled: Blackberries, Clipper Brand, Wm. Munson & Sons, Baltimore, Md.

Tin dioxide	0.060%
Grains per pound	4.20
Equivalent to stannous chloride	5.28
Minimum doses	84.0
Maximum doses	10.6

Can badly eroded.

Serial No. 581.—Sample of canned cherries, received of Edward Bethel, July 29, 1890. Labeled: Red Cherries, Cloverdale Brand, G. C. Mournaw & Co.. Cloverdale, Va.

Tin dioxide	0.0414%
Grains per pound	2.898
Equivalent to stannous chloride	3.65
Minimum doses	58.4
Maximum doses	7.3

Can badly eroded.

Serial No. 582.—Sample of canned pumpkin, received of Edward Bethel, July 29, 1890. Labeled: Royal Pumpkin, Urbana Canning Co., Urbana, Ohio.

Tin dioxide	0.0184%
Grains per pound	1.299
Equivalent to stannous chloride	1.62
Minimum doses	25.9
Maximum doses	3.2

Can eroded.

Serial No. 583.—Sample of canned baked sweet potatoes, received of Edward Bethel, July 29, 1890. Labeled: Tennessee Baked Sweet Potatoes, Capital Canning Co., Nashville, Tenn.

Tin dioxide	0.0132%
Grains per pound	0.92
Equivalent to stannous chloride	1.16
Minimum doses	18.5
Maximum doses	2.3

Can eroded.

Serial No. 584.—Sample of canned peas, received of Edward Bethel, July 29, 1890. Labeled: Marrowfat Peas, Parson Bros., Aberdeen, Maryland.

Tin dioxide	0.0044%
Grains per pound	0.30
Equivalent to stannous chloride	0.38
Minimum doses	6.2
Maximum doses	0.8

Can slightly eroded.

Serial No. 585.—Sample of string beans, received of Edward Bethel, July 29, 1890. Labeled: String Beans. Packed by H. P. Hemingway & Co., Baltimore City, Md.

Tin dioxide	0.0154%
Grains per pound	1.08
Equivalent to stannous chloride	1.36
Minimum doses	21.7
Maximum doses	2.7

Can eroded.

Serial No. 586.—Sample of canned salmon, received of Edward Bethel, July 29, 1890. Labeled: Puget Sound Fresh Salmon, Puget Sound Salmon Co., W. T.

Tin dioxide	0.0044%
Grains per pound	0.30
Equivalent to stannous chloride	0.38
Minimum doses	6.20
Maximum doses	0.8

Can slightly eroded.

Serial No. 587.—Sample of condensed milk, received of Edward Bethel, July 29, 1890. Labeled: Borden's Condensed Milk. The Gail Borden Eagle Brand, New York Condensed Milk Co., 71 Hudson street, New York:

Tin dioxide	none.

No visible erosion.

Serial No. 592.—Sample of canned pineapples, bought of Mr. Brown, Fifth avenue, August 4, 1890. Labeled: Pineapples, First Quality. Packed by Martin Wagner & Co., Baltimore, Md.

Tin dioxide	0.0098%
Grains per pound	0.686
Equivalent to stannous chloride	0.864
Mininum doses	13.6
Maximum doses	1.7

Can eroded.

Serial No. 593.—Sample of canned pineapples, bought of Mr. Brown, Fifth avenue, August 4, 1890. Labeled: Florida Pineapple, Oval Brand. Extra Quality. A. Booth Packing Co., Baltimore, Md.

Tin dioxide	0.0158%
Grains per pound	1.11
Equivalent to stannous chloride	1.4
Mininum doses	22.4
Maximum doses	2.8

Can eroded.

A NEW FORM OF VOLTAMETER.

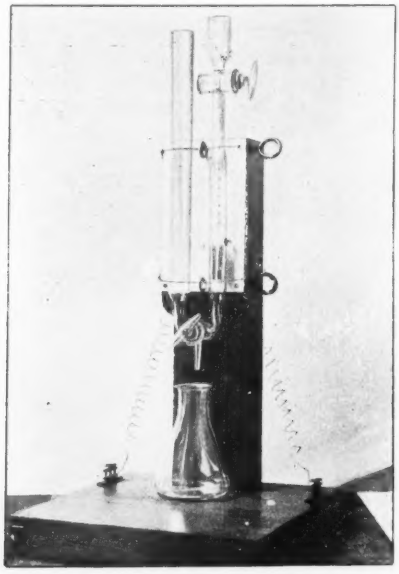
By Dr. G. C. Caldwell.

In the recent development of electrolytic analysis it has come to be shown that a more careful adjustment of the strength of the current is essential, and that for much of the work very weak currents, evolving even as little as 0.1 or 0.2 c.c. of oxy-hydrogen gas per minute must be used for the best results; and it is not often, for any practicable determinations, that a current yielding over 10 c.c. per minute is required.

Therefore a voltameter that will readily show in its upper part tenths of a cubic centimeter is essential, and with a total capacity of 10 c.c. in its measuring tube is quite large enough, while in the measurement of the stronger currents the accurate reading to tenths is not important.

Classen's voltameter is familiar to those who make much use of electrolytic analysis. With its capacity of 30 c.c. it is unnecessarily cumbersome; and it is practically impossible to prevent slow leakage of the acid liquid when the rubber tube connects with the glass tubes. Other voltameters figured or described in the apparatus lists are now no more convenient.

For my own use I have devised the arrangement, made for me by Greiner, shown in the figure. It needs little explanation.



The lower stop cock is three-way, so that the two tubes can be connected with one another, or each or both with the outflow jet,

at pleasure. The distance from the lower to the upper stop cock is 21 cm., the diameter of the wider part of the graduated tube about 16 mm., the length of the narrow part, especially for measuring tenths, is 4 cm., and, as shown, this holds about 2 c.c.

The instrument is conveniently supported on a wooden stand, and held in place by two pieces of D violin strings, each piece having a loop at one end that passes over the head of a small screw in the side of the post, then through a small screw eye in front, then through a small hole in the shank of a larger screw eye in the other side of the post; by holding the end of the string cautiously near the lamp flame, it will swell sufficiently so that it cannot slip out through the hole again; then by turning the screw eye, a very little tightening of the string holds the instrument firmly in place.

Ordinary binding posts on the base of the stand can, of course, be used instead of the screw clamps; but with the wires from the electrodes soldered to these clamps, they serve the purpose well.

The acid electrolyte will leak even around a vaselined glass stopper, in time. But it is not at all essential to have an outflow at the bottom, especially if the reservoir tube is made somewhat wider than the other. The diminution of the volume of the gas under the pressure of the longer column of liquid in the reservoir tube is too small to be of account in this work. Even in my own instrument, with a reservoir tube only 17 mm. wide, when 2 c.c. have been collected, the change in volume by allowing the excess of liquid in the reservoir tube to flow out is inappreciable; when the level in the graduated tube has fallen to the mark for 9 c.c. and the reservoir tube is full to the top, the increase in volume is but 0.2 c.c. when both levels are brought to the same height. Without the three-way, outflow stop cock the instrument would, of course, be much cheaper and practically quite as serviceable.

CORNELL UNIVERSITY, July, 1891.

IDENTIFICATION OF ARSENIC AND ANTIMONY.

By James T. Anderson.

The method of separating arsenic and antimony by passing H_2S and then dry HCl gas through the tubes in which the metals have been deposited as in Marsh's test, has been modified by the writer so as to be conveniently applied in cases where it is desired to identify as arsenic or antimony metallic deposits on porcelain.

Add a drop of ammonium sulphide to the deposit, which converts the metal into the sulphide. Allow the excess of ammonium sulphide to evaporate, and with an ordinary mouth blowpipe blow across the open mouth of a bottle containing concentrated HCl, directing the stream of gas into the porcelain dish upon the sulphide. If it be antimony sulphide, it will disappear entirely, while arsenic sulphide will remain unaffected in appearance.

Agr. & Mech. College, Auburn, Ala., July 27, 1891.

ON METATITANIC ACID AND THE ESTIMATION OF TITANIUM BY HYDROGEN PEROXIDE.

By Prof. F. P. Dunnington.

The detection and estimation of small amounts of titanic acid which has long been very tedious and unsatisfactory, has been rendered exceedingly simple through the publication of A. Weller in the *Ber. d. Chem. Ges.*, 1882, of a method depending upon the production of a compound of intense yellow color by the addition of hydrogen peroxide to the solution of titanium.

Since its publication I have made considerable use of this method, but have recently noted a feature in the test which must be kept in view to avoid error. The solution of the melt obtained by fusion with acid sodium sulphate when made with dilute sulphuric acid of five or more per cent., gives constant results, which tally with those made gravimetrically; but when water only or very dilute acid is employed, one may obtain lower results. Upon one occasion a coloration was obtained which corresponded to only about one-third of the titanium, which was afterwards found to

be present. Moreover, if we take a slightly acid solution of titanium sulphate, dilute it and heat until it is partially precipitated, cool, redissolve with sulphuric acid and then add hydrogen peroxide, the yellow coloration will correspond to only a portion of the titanium present. I find an explanation of these facts in the formation of some meta-titanic acid. It is uniformly stated that when titanic acid is precipitated by heating a not too acid solution, it separates in the form of meta-titanic acid.

In order to further examine the metatitanic acid which was in part described by Weber (*Jahr.*, 1863, p. 210), I have isolated it as follows: Heat a dilute solution of titanium sulphate to 100° C.; gradually add ammonia to excess, filter, treat the washed precipitate with hydrochloric acid and warm; there results a residue which is nearly insoluble in strong hydrochloric acid. Now wash this once or twice by decantation with cold water, and, when most of the hydrochloric acid is removed, there will be left a mass perfectly and readily soluble in cold water.

Again, if the above precipitate is treated with hydrochloric acid, and then evaporated upon the water bath to remove the latter acid, there is left a mass of scales of a gummy appearance, which dissolves in a moderate amount of water, giving an opaline solution. This substance is practically free from chlorine and contains one molecule of water to one of titanic acid—and so presents the composition of the air dried metatitanic acid of Merz. If either of these water solutions of meta-titanic acid be treated with hydrogen peroxide, it will not be colored yellow, but afford a white precipitate.

It therefore appears probable that after the fusion of titanic oxide with acid sodium sulphate, if the melt is digested in water only, the solution of the free acid may occasion sufficient heat to form some metatitanic acid, which when redissolved by the further admixture of acid would not be colored by the hydrogen dioxide.

And we conclude that in making the estimation of titanium by the method of A. Weller, the "melt," after cooling, is to be digested in dilute sulphuric acid of such strength as will prevent the formation of a precipitate even in warm solutions of titanic sulphate; for this purpose 5 per cent. acid is found to answer.

UNIVERSITY OF VIRGINIA, August, 1891.

AN ERROR IN THE PRESENT OFFICIAL METHOD FOR THE DETERMINATION OF ALBUMINOID NITROGEN, AND THE EFFECT OF THE PRESENCE OF METALS PRECIPITABLE BY POTASSIUM SULPHIDE IN THE DETERMINATION OF NITROGEN BY KJELDAHL'S METHOD.*

By Harry Snyder.

In the determination of nitrogen by the Kjeldahl method directions are given for the addition of potassium sulphide to precipitate *all* mercury from the solution in order to prevent the formation of mercuro-ammonium compounds which are not completely decomposed by soda solution.

The determination of albuminoid nitrogen according to the present official method, requires the use of 0.7 to 0.8 grm. of copper hydroxide previous to the determination of the nitrogen by the Kjeldahl method.

The copper oxide is carried along in the determination, and is freely soluble in the sulphuric acid; no provision is made for its removal, and when the potassium sulphide is "added to precipitate *all* mercury in solution," copper sulphide is alike precipitable in the acid solution with the mercury. The copper present is more than enough to combine with all the potassium sulphide; the result is that neither metal is completely precipitated, and a large and variable portion of the mercury is left in the solution and all the conditions are favorable for the formation of mercuro-ammonium compounds. The work given to the potassium sulphide is doubled and the object for which it is added is not attained.

In order to determine to what extent the mercury so left in the solution would effect the results a number of determinations were started; to some the official "20 c.c. of potassium sulphide" were added, and to others a sufficient quantity of the same solution to

* Presented to the A. A. O. A. C., at their annual meeting held in Washington, August, 1891, and read by Prof. Caldwell, President of the Association.

precipitate *all* the copper as well as *all* mercury in solution. The large amount of precipitate formed in the latter case caused so much bumping that only one determination out of six could be completed.

In order to obviate this difficulty the operation was carried on exactly as required by the official method except that previous to distillation the acid solution was made up to 200 c.c. and divided into two 100 c.c. portions. One portion was distilled with the relative official amount of potassium sulphide, and the second with enough of the same solution to complete the reaction. This gives a more satisfactory basis for the comparison of results, since all the conditions previous to the distillation are the same as to the degree of oxidation and the amounts of mercury and copper in solution.

The following results were obtained :

	50 c.c. K_2S	30 c.c. K_2S.	Difference.
Ensilage No 1.....	1.28 per cent.	1.12 per cent.	0.16 per cent.
	1.25 "	1.14 "	0.11 "
No. 2.....	0.66 "	1.53 "	0.13 "
	0.66 "	1.60 "	0.06 "
No. 3.....	1.36 "	1.27 "	0.09 "
	1.20 "	1.15 "	0.05 "
No. 4.....	1.52 "	1.45 "	0.07 "
	1.54 "	1.45 "	0.09 "
No. 5.....	1.18 "	1.08 "	0.10 "
	1.23 "	1.12 "	0.11 "
		Average.....	0.096

Since all the conditions previous to distillation and addition of the potassium sulphide were the same in each portion as to the degree of oxidation, and amounts of mercury and copper in solution the constant larger proportion of nitrogen yielded with the 50 c.c. of potassium sulphide must be due to the incomplete precipitation of all the mercury in solution when only 20 c.c. is added. The average difference in the ten portions amount to nearly a tenth of one per cent.

Blank determinations with both 20 and 50 c.c. portions of potassium sulphide showed no quantity of nitrogen. A difference of

a tenth of one per cent. of nitrogen when multiplied by the protein factor would make a difference of over six-tenths of one per cent. of protein, a difference which is too great to be overlooked.

Some change must therefore be made in combining Stutzir's and Kjeldahl's methods. The following proportions of substance and solutions will give satisfactory results. Start with 7 gms. of substance instead of 1 gram, take a quantity of copper hydroxide and glycerine solution equivalent to .5 to .6 grams of the hydroxide instead of .7 to .8, and finally use 30 c.c. of potassium sulphide instead of 20. Trials with these proportions on the committee sample of corn meal gave 1.56 per cent. and 1.55 per cent. of albuminoid nitrogen with the old proportions, with all of the copper and mercury precipitated, 1.56 per cent. of albuminoid nitrogen.(1)

In the determination of nitrates by the official method 2 grams of zinc dust are used but the previous addition of 2 grams of salicylic acid converts the zinc into an insoluble and crystalline form at the close of the digestion. This is shown to be true by the following results of the analysis of pure potassium nitrate, when the solution was divided as in the case of the determination of albuminoid nitrogen.

	20 c.c. K_2S	40 c.c. K_2S
1.	Nitrogen 14.02 per cent.	14.02 per cent.
2.	" 13.98 "	13.98 "

If in the above tests the salicylic acid is omitted the results obtained are not uniform, and fall short of the actual amount of nitrogen present. This is due to the presence of the zinc in solution, which causes the same trouble as the copper. Any other metal precipitable by potassium sulphide would be equally liable to produce the same effect, as all of the conditions would be equally favorable for the formation of mercuro-ammonium compounds.

CORNELL UNIV., Lab. of Agr. Expt. Station.

(1) These changes as given above have been adopted in the official method.

RAPHIDES, THE CAUSE OF THE ACRIDITY OF CERTAIN PLANTS.

By R. A. Weber, Ph. D.

At the last meeting of the American Association for the Advancement of Science, Prof. W. R. Lazenby reported his studies on the occurrence of crystals in plants. In this report he expressed the opinion that the acridity of the Indian turnip was due to the presence of these crystals or raphides. This opinion was opposed by Prof. Burrill and other eminent botanists, who claimed that other plants, as the fuchsia, are not at all acrid, although they contain raphides as plentifully as the Indian turnip. Here the matter was allowed to rest.

The U. S. Dispensatory and other works on pharmacy ascribe the acridity of the Indian turnip to an acrid, extremely volatile principle insoluble in water and alcohol, but soluble in ether. Heating and drying the bulbs dissipate the volatile principle, and the acridity is destroyed.

At a recent meeting of Ohio State Microscopical Society this subject was again brought up for discussion. It was thought by some that the raphides in the different plants might vary in chemical composition, and thus the difference in their action be accounted for. This question the writer volunteered to answer.

Accordingly, four plants containing raphides were selected, two of which, the *Calla cassia* and Indian turnip, were highly acrid, and two, the *Fuchsia* and *Tradescantia*, or Wandering Jew, were perfectly bland to the taste.

A portion of each plant was crushed in a mortar, water or dilute alcohol was added, the mixture was stirred thoroughly and thrown upon a fine sieve. By repeated washing with water and decanting a sufficient amount of the crystals was obtained for examination. From the calla the crystals were readily secured by this

means in a comparatively pure state. In the case of the Indian turnip the crystals were contaminated with starch, while the crystals from the fuchsia and tradescantia were imbedded in an insoluble mucilage from which it was found impossible to separate them. The crystals were all found to be calcium oxalate.

Having determined the identity in chemical composition of the crystals, it was thought that there might be a difference of form of the crystals in the various plants, from the fact that calcium oxalate crystalizes both in the tetragonal and the monoclinic systems. A laborious microscopic examination, however, showed that this theory also had to be abandoned. The fuchsia and tradescantia contained bundles of raphides of the same form and equally as fine as those of the acrid plants. At this point in the investigation the writer was inclined to the opinion that the acridity of the Indian turnip and calla was due to the presence of an acrid principle.

Since the works on pharmacy claimed that the active principle of the Indian turnip was soluble in ether, the investigation was continued in this direction. A large stem of the calla was cut into slices, and the juice expressed by means of a tincture press. The expressed juice was limpid and filled with raphides. A portion of the juice was placed into a cylinder and violently shaken with an equal volume of ether. When the ether had separated a drop was placed upon the tongue. As soon as the effects of the ether had passed away, the same painful acridity was experienced as is produced when the plant itself is tasted. This experiment seemed to corroborate the assumption of an acrid principle soluble in ether. The supernatant ether, however, was slightly turbid in appearance, a fact which was at first ignored. Wishing to learn the cause of this turbidity a drop of the ether was allowed to evaporate on a glass slide. Under the microscope the slide was found to be covered with a mass of raphides. A portion of the ether was run through a Munktell filter. The filtered ether was clear, entirely free from raphides, and had also lost every trace of its acridity.

The same operations were repeated upon the Indian turnip with exactly similar results.

These experiments show conclusively, that the acridity of the Indian turnip and calla is due to the raphides of calcium oxalate only.

The question of the absence of acridity in the other two plants still remained to be settled. For this purpose some recent twigs and leaves of the fuchsia were subjected to pressure in a tincture press. The expressed juice was not limpid, but thick, mucilagenous and ropy. Under the microscope the raphides seemed as plentiful as in the case of the two acrid plants. When diluted with water and shaken with ether, there was no visible turbidity in the supernatant ether, and when a drop of the ether was allowed to evaporate on a glass slide, only a few isolated crystals could be seen. From this it will be seen that in this case the raphides did not separate from the mucilagenous juice to be held in suspension in the ether. A great deal of time and labor were spent in endeavouring to separate the crystals completely from this insoluble mucilage but without avail. With the tradescantia similar results were obtained.

From these experiments the absence of acridity in these two plants, in spite of the abundance of raphides, may readily be explained by the fact, that the minute crystals are surrounded with and embedded in an insoluble mucilage, which prevents their free movement into the tongue and surface of the mouth, when portions of the plants are tasted.

The reason why the Indian turnip loses its acridity on being heated, can be explained by the production of starch paste from the abundance of starch present in the bulbs. This starch paste would evidently act in a manner similar to the insoluble mucilage of the other two plants.

So also it can readily be seen that when the bulbs of the Indian turnip have been dried, the crystals can no longer separate from the hard mass which surrounds them, and consequently can exert no irritant action when the dried bulbs are placed against the tongue.

Abstracts of American Patents Relating to Chemistry.

(From the U. S. Patent Office Gazette.)

July 7, 1891.

455,308.—Apparatus for defecating and evaporating saccharine juices. Ramon F. Cordero, Rubio, Venezula.

455,376.—Manufacture of cement. Herbert H. Wing, Buffalo, N. Y.

A mixture of a phosphate and silicate is calcined, the resulting product forming hydraulic cement.

455,420.—Method of electric welding. Elihu Thompson, Swampscott, Mass.

455,442.—Betadeltaamidonaphthol. Jacob Schmid, Basle, Switzerland.

This new product is derived from the sodium salt of beta-naphthylaminedeltamonosulpho acid, melting at about 200°C, crystallizing from alcohol in small white needles, scarcely soluble in water, more so in benzine, easily soluble in ether and alcohol.

455,458.—Process of and apparatus for the reduction of ore. Charles J. Eames, New York, N. Y.

455,471.—Condensing apparatus. John Caven, Indianapolis, Ind.

455,491.—Cooling apparatus for calcined material. Amable B. Bonneville, Allentown, Pa.

455,529.—Process of coating wire with other metal. John Coffin, Johnstown, Pa.

455,531.—Ore separator. Edward G. Good and James Thorne, Portland, Ore.

455,580.—Treatment and preparation of gypsum. Frederick G.H.Rothe, Berlin, Ger.

455,611.—Process of reducing kaolins and clays to their component oxides. Philip A. Emanuel, Aiken, S. C.

The clay is treated with sulphuric acid and heated for the conversion of the alumina into aluminium sulphate. This sulphate is then separated from the silica, and heated with sulphur.

455,631.—Apparatus for the defecation of saccharine juices by electricity in the manufacture of sugar. Elias Maigrot and José Sabates, Havana, Cuba.

455,654.—Ore washer. James O. Campbell, Colton, Utah.

455,674.—Process of treating hides. George C. Walter, Hastings, Mich.

455,675.—Purification and manufacture of sugar. Moriz Weinrich, St. Louis, Mo.

455,693.—Galvanic battery. Henry C. Sample, Ravenswood, Ill.

July 14, 1891.

455,768.—Manufacture of tartaric acid. Robert W. Shedler, Brooklyn, N. Y.

Solutions of tartaric acid concentrated to the point of crystallization are subjected to an addition of sulphuric acid whereby the quantity of crystallized tartaric acid as the result of the first crystallization is increased. The mother liquor is then used for the further treatment of calcium tartrate and thus a second charge of tartaric acid is obtained in solution.

455,802.—Apparatus for the treatment of city refuse. John C. Stanley and Joseph Russell, London, Eng.

455,808. } —Electro-magnetic ore separator. Jonas Wenström, Örebro,
455,809. } Sweden.

455,952.—Brown dyestuff. Christopher Ris, Basle, Switzerland.

A brown dye derived from a mixture of paranitro-tolnol sulpho-acid with paraphenylendiamine in a solution of caustic alkalies. The dye is soluble in water and alcohol.

456,047.—Process of producing surprise pictures. Otto Meyer, New York, N. Y.

Drawings are made upon suitable material with solutions of phenolphthalein, ceroline, or any other indicator of alkaline reaction, and subsequently subjecting the same to the reaction of an alkali to develop the lines, words or figures.

456,081.—Red dyestuff. Maurice Ceresole, Neuville, France.

The new dye base, symmetrical diethylrhodamine, derived from monoethylmetaamidophenol and phthalic anhydride, is a bluish red, crystalline powder, slightly soluble in water, alcohol, ether, and benzine, readily soluble in wood spirit with greenish fluorescence, forming a basic hydrochloride readily soluble in alcohol with intense green yellow fluorescence, soluble in strong hydrochloric and sulphuric acids, and slightly soluble in water with subsequent decomposition and separation of the base.

July 21, 1891.

456,140.—Apparatus for the manufacture of coal gas. James Elliott, Ludlow, Eng.

456,172.—Method of measuring electric currents. Elihu Thompson, Lynn, Mass.

The method consists in generating heat by the electric current, evaporating a liquid by the heat so generated and from the amount of evaporation ascertaining the amount of current.

456,183.—Process of obtaining iodine. Hubert H. Wing, Buffalo, N. Y.

The mother liquor from the purification of sodium nitrate is mixed with silicious material and the mixture is calcined. The sublimed iodine is collected in suitable chambers.

456,204.—Manufacture of galvanized iron. Joseph W. Richards, Philadelphia, Pa.

Metallic aluminium is diffused throughout a bath of metallic zinc and the metallic iron then dipped into this bath.

456,241.—Process of treating cocoanut husks. John T. Davis, San Francisco, Cal.

The husks are first digested in an alkaline solution under heat and then subjected to the action of crushing rollers, etc.

456,294.—Manufacture of soda-alum. Francis M. Spence and David D. Spence, Manchester, Eng.

456,297.—Plastering composition. Aaron Anthony, Springfield, Ill.

456,311.—Flux for smelting or reducing ores. Thomas Miller, Salt Lake City, Utah.

456,314.—Manufacture of plated stock for jewelry. John S. Palmer Providence, R. I.

456,323.—Ore leaching machine. Pierre L. Gibbs, Clinton, Iowa.

456,481.—Manufacture of glucose or sugar. Julius Dubiel, Waukegan, Ill.

456,499.—Apparatus for evaporating liquids containing salt. Sigismund Pick, Szczakowa, Austria-Hungary.

456,508.—Celluloidal explosive and process of making the same. Alfred Nobel, Paris, France.

A dense, horny, granular substance, solid at ordinary temperature, and composed of nitro-cellulose, nitro-glycerine and suitable oxidants.

456,516.—Process of treating copper matte. Pierre Mannes, Lyons, France.

456,517.—Ore-roasting furnace. Patrick Marley, Idaho City, Idaho.

456,540.—Method of welding by electricity. John H. Bassler, Myerstown, Pa.

456,541.—Method of and apparatus for electric-welding. S. Lloyd Wygand, Philadelphia, Pa.

July 28, 1891.

456,589.—Method of preparing sterilized chocolate. Gustav H. Neuhauss, Johann F. H. Gronwald, and Emil Oehlmann, Berlin, Germany.

456,606.—Process of and apparatus for expressing oil and regulating the action of hydrostatic presses. John H. Vaile, Dayton, Ohio.

456,622.—Magnetic separator. David E. Lain, Yonkers, N. Y.

456,627.—Process of making azo dyes. Carl A. Martins, Berlin, Germany.

The process consists "in first forming an alpha-naphtholdisulphonic acid by treating naphthaline disulphonic acid with nitric acid, reducing the alpha-nitronaphthaline disulphonic acid and conveying said alpha-amidonaphthaline disulphonic acid into the corresponding compound alpha-

naphthol disulphonic acid; secondly, forming a diazo derivative of an amido compound, such as xylidine, cumidine, alpha-naphthylamine, etc.; and, thirdly, adding the said alpha-naphthol disulphonic acid to the diazo compound so formed."

456,629.—Process of making azo dyes. Carl A. Martius, Berlin, Germany.

Process somewhat similar to the above except from second stage, when a tetrazo derivative of an amido compound is formed, such as diamidostilbene, benzidine, etc.; thirdly, adding to the solution of the tetrazo compound so formed the alpha-naphthol disulphonic acid in certain proportions to form a compound of one molecule of the tetrazo compound combined with one of the alpha-naphthol disulphonic acid; and, fourthly, adding to this compound a portion of naphthol or naphthol-sulphonic acid in the proportions about as stated; and, fifthly, precipitating the dye stuffs from the solution.

456,659.—Vulcanized paint. Luke W. Osborn, Joliet, Ill.

456,663.—Reverberatory furnace. William Stubblebine, Bethlehem, Pa.

456,730.—Machine for decorticating fibrous plants. John H. Lorimer, Philadelphia, Pa.

456,772.—Composition to be used as a varnish, lacquer, or glue. Thomas B. Osborne, New Haven, Conn.

Consists of zein, a resinous gum and mutual solvent thereof.

456,773.—Process of extracting zein. Thomas B. Osborne, New Haven, Conn.

The nitrogenous matter left after the manufacture of starch from corn is treated with a suitable solvent to extract the zein.

456,791.—Apparatus for making bisulphites. Norman H. Riopan, Kaukauna, Wis.

456,821.—Process of waterproofing and preserving textures and other materials. Charles F. Hime and John H. Ward, London, Eng.

The fibrous materials are treated with a solution of cellulose and ammonia zinc.

456,844.—Gold chlorinating process. James H. Pollock, Glasgow, Scotland.

456,852.—Concentrator and amalgamater. Jacob Rodermond, New York, N. Y.

456,872.—Process of manufacturing malt. Frederick W. Wienbrock, New York, N. Y.

456,890.—Drying oil and method of making the same. Norval H. Finley, Rochester, Pa.

456,897.—Azo dye. Carl A. Martins, Berlin, Germany.

To a tetrazo derivative of diphenylidine add alpha-naphthol disulphonic acid (see Pat. 456,627) in certain proportions to form a compound of one

molecule of tetrazodiphenilidine with on ⁹ of the alpha-naphthol disulphonic acid, then adding to this compound another portion of the alpha-naphthol disulphonic acid, and then precipitating the dyestuff.

456,903.—Food compound. George F. Ordway, Boston, Mass.

A food candy consisting of a protein substance, fat, sugar, sodium phosphate, magnesium carbonate and flavoring materials.

456,967. } —Ore concentrator. Charles E. Seymour, Hurley, Wis.
456,968. }

457,002.—Process of making nitro-glycerine. Ebenezer K. Mitting, Chicago, Ill.

457,028.—Process of making chrome yellow. Frederick W. Ihne, Kansas City, Mo. Pulverized galena is treated with nitric acid to make lead nitrate and the solution is precipitated by a soluble chromate, etc.

457,029.—Process of treating tobacco leaves. William E. Johns, High Point, N. C.

457,063.—Apparatus for charging furnaces. George R. Ward, Munhall, Pa.

457,097.—Process of evaporating sirup. Lorin R. Tabor, Westford, Vt.

457,145.—Ore sampling machine. Henry L. Bridgman, Blue Island, Ill.

457,205.—Alloy and method of producing it. Henry Marbeau, Paris, France. A method of producing alloys of iron and steel with nickel.

457,231.—Method of manufacturing rock faced, artificial stone. Charles W. Stevens, Lansing, Mich.

457,250.—Furnace. Nicholas Brayer, Rochester, N. Y.

457,256.—Process of obtaining zinc sulphate from zinciferous ores. Charles E. Croselmire, Newark, N. J.

August 11, 1891.

457,342.—Anti-corrosive and anti-fouling compound. Max E. Dejonze, Stapleton, N. Y. A compound consisting of zinc dust six parts and paraffine one part by weight.

457,465.—Potting kiln. John McCloskie, Massillon, Ohio.

457,471.—Preserving apparatus. Leopold Bregher, Ober Döbling, near Vienna, Austria.

457,487.—Apparatus for the manufacture of gas. John H. W. Stringfellow, London, Eng.

457,488.—Process of dyeing. Alfred Fischhesser and Joseph Pokorny, Lutterbach, Germany. The improvement consists in alternately impregnating or coating the fiber or fabric with a diazotized amido substance and with betaoxynaphthoic acid, the melting point of which is 216° C.

457,541.—Apparatus for grinding and amalgamating ores. Frederick Stahl and John S. Rew, St. Armand, Victoria.

457,589.—Rotory furnace for burning cement, lime, etc. José F. de Navarro, New York, N. Y.

457,712.—Process of photographing. Israel H. Hamburger, New York, N. Y. A process for producing a photographic picture in relief upon the surface of a sheet or block of zylonite or other pyroxyline material. "A sheet of the material is coated with a solution of albumen acidulated with acetic acid, applying to this surface a paper sensitized in any suitable manner and having a pigment or dye mingled with the sensitized coating, the latter containing an undeveloped photographic image or picture, immersing the coated surface with the paper applied in cold water, pressing the paper closely upon said surface, then immersing the same with the paper in contact in warm water, removing the paper and the soluble parts of the sensitized coating, hardening the insoluble adhering parts by immersion in cold water, fixing the picture by immersion in a strong solution of alum and drying."

August 18, 1891.

457,799.—Method of producing Alcohol. Alfred Springer, Cincinnati, Ohio. Grain or farinaceous material is treated with dilute nitric acid for the conversion of the starch into dextrose, and the mash afterward fermented while wholly or partially retaining the acid, then neutralizing and distilling the mash.

457,803.—Carburetor. Oliver Vanorman, Los Angelos, Cal.

457,817.—Method of preparing photographic plates. Oswald Moh, Görlitz, Germany.

A plate of moscovite or mica, "previously submitted to a treatment by a solution of chromic alum and gelatin for removing the mineral grease, from the natural mica and enabling the same to receive in fixed and solid adherence a sensitive coating."

457,821.—Enameling oven or kiln. David O. Paige, Detroit, Mich.

457,831.—Soda motor. Robert R. Zell, Baltimore, Md.

457,832.—Method of operating motors. Robert R. Zell, Baltimore, Md.

457,863.—Process of making isoeugenol. George de Laire, Paris, France.

Eugenol or essence of cloves is heated with potassium hydrate and alcohol until a reaction is effected, the alcohol is then expelled with steam and the mass is treated with acid to separate the isoeugenol.

457,864.—Process of making compounds of isvengenol. George de Laire, Paris, France.

457,914.—Soap making apparatus. William A. Grant, Houston, Tex.

457,917.—Apparatus for purifying water. Thomas Shaw, Philadelphia, Pa.

457,953.—Composition for artificial stone. Edward Gallagher, Lock Haven, Pa.

Consists of cement sand, plaster of paris, powdered soapstone and salt mixed in a dry state and then rendered plastic by the admixture of lime-water.

458,020.—Indelible print or picture. Joseph R. France, New York, N. Y.

458,075.—Oil filter. Thomas W. Shelton, Cleveland, Ohio.

458,102.—Furnace for calcining ores. James Douglas, New York, N. Y.

458,132.—Process of impregnating leather. George C. Seeberger, Munchberg, Germany.

The leather is first impregnated with an oil, the latter then partially oxidized and finally the whole coated with a resinous varnish.

458,134.—Chemical fire extinguisher. Ernest F. Steck, Chicago, Ill.

458,135.—Process of making paper stock. John D. Tompkins, Nassau, N. Y.

Aug. 25, 1891.

458,157.—Composition of matter for use as a substitute for glass, etc. Freiderich Eckstein, Vienna, Austria-Hungary.

A composition of matter consisting of collodion wool, a non-resinous oil, a castor oil, and a balsam or soft rosin.

458,174.—Apparatus for pneumatic malting. Johannes Küntze, Nordhausen, Germany.

458,193.—Milk testing apparatus. David T. Sharples, Elgin, Ill.

458,194.—Centrifugal milk testing apparatus. David T. Sharples, Elgin, Ill.

458,244.—Litmus pencil. Josiah S. Tyree, Washington, D. C.

458,281.—Induline dye. Benno Homolko, Höchst-on-the-Main, Germany.

Process of heating a mixture of soluble indulines together with paraphenylenediamine and hydrochlorate of paraphenyldiamine, and, after filtering, precipitating by means of common salt and zinc chloride. The process yields a blue coloring matter of the induline series, a zinc chloride double salt in form of a brown powder with metallic lustre, insoluble in ether, benzole and chloroform, somewhat soluble in alcohol, of very easy solubility in water, showing violet blue coloration, nearly insoluble in hydrochloric acid, but soluble in cold sulphuric acid, and precipitated by alkalies and oxidizing agents from aqueous solutions.

458,283.—Azo dye. Hans Kuzel, Höchst-on-the-Main, Germany.

Process for producing an azo coloring matter by diazotizing 93 parts of aniline with 267.7 parts of hydrochloric acid thirty per cent., and 69 parts of sodium nitrite (all by weight), at a temperature between 0° and

5° C. and, while stirring, introducing it into a paste made from 404 parts of the disodium salt of naphthaline disulphonic acid and 340 parts of sodium acetate (all parts by weight) and finally precipitating the color by means of common salt, filtering, and drying it.

The coloring matter is a brown powder easily soluble in cold water and dilute acids, freely soluble in hot alcohol of 75° Tralles, insoluble in ether and ligroine, and adapted for dying wool in greatly differing shades, ranging from bluish red to deep black, depending upon the use of acids or the latter in combination with metallic mordants.

458,284.—Azo dye. Hans Kuzel, Höchst-on-the-Main, Germany.

A dark reddish brown powder derived from naphthol trisulphonic acid-monamide and diazo bodies.

458,285.—Amido-naphthol monosulphonic acid. Hans Kuzel, Höchst-on-the-Main, Germany.

Method consists in melting the salts of beta-naphthylamine disulphonic acid with caustic alkalies. The amido-naphthol monosulphonic acid is a crystalline powder of difficult solubility in water and of less solubility in alcohol of 60° Tralles, insoluble in absolute alcohol, ether, and ligroine. The solution of the acid or its salts show violet blue fluorescence, with Fe_2Cl_6 solution a dirty red coloration, and with chloride of lime a dark red brown coloration, which, on the addition of an excess disappears gradually, and the diazo compound is yellow.

458,286.—Amido-oxynaphthaline disulphonic acid. Hans Kuzel, Höchst-on-the-Main.

Long pearly needles slightly soluble in alcohol, ligroine and ether, easily soluble in water with violet fluorescence, turning green by the addition of alkali, brown by ferric chloride and bleaching powder, but decolorized by an excess of the latter.

458,419.—Substitute for white of eggs. John E. Furber, Lawrence, Mass.

A powder composed of soluble vegetable or animal albumen, corn starch, dextrine, sodium bicarbonate, sodium chloride, sulphur and phosphates.

458,420.—Compound as a substitute for yolks of eggs. John E. Furber, Lawrence, Mass.

Similar to No. 458,419 but with addition of animal or vegetable oil.

458,440.—Ice making and refrigerating machine. William H. Appleton, New York, N. Y.

458,502.—Amalgamator. Thomas Shannon, Whitewood, S. D.

458,534.—Composition for water-proofing pulp and other fibrous articles. Frank E. Keyes, Lockport, N. Y.

A mixture of rosin, linseed oil, and cottonseed oil.

458,551.—Insulating compound. James L. Marmand, Malden, Mass.

J. F. G.